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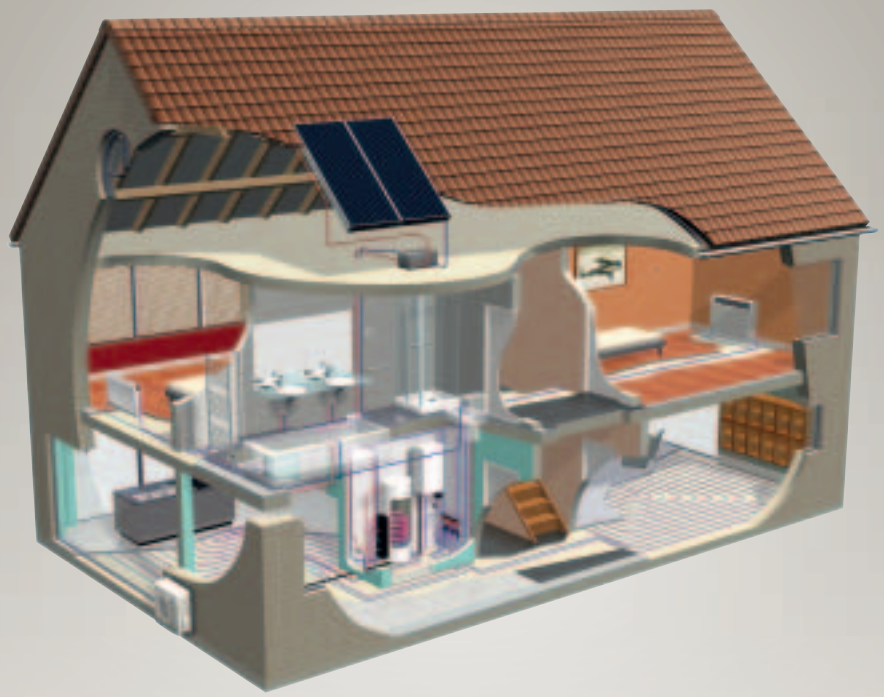
altherma

Heating

Technical Data

Daikin Altherma



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Heating

Technical Data

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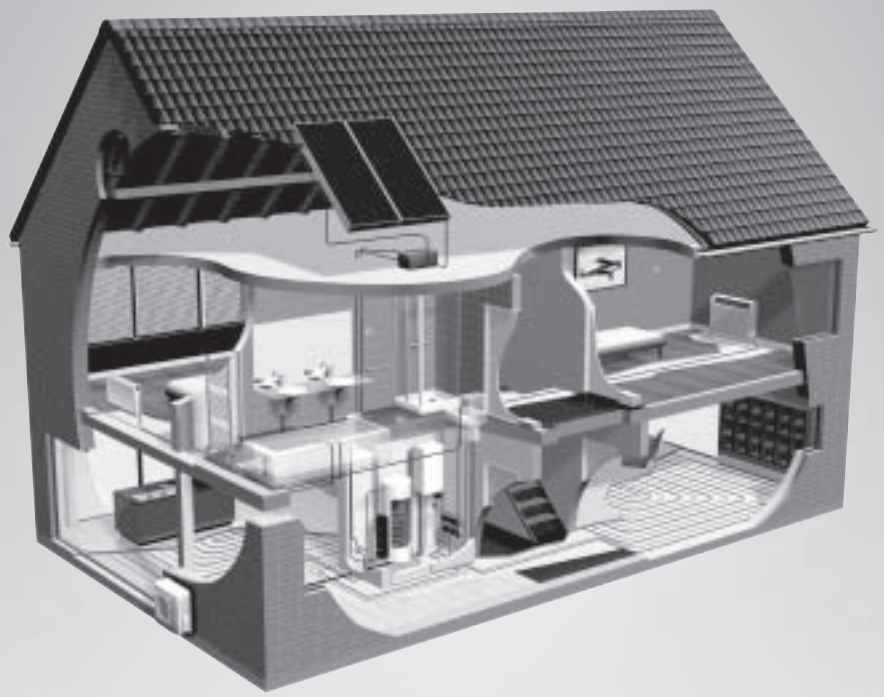

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1 Features

- High temperature application: up to 80°C without electric heater
- Possible to choose between low temperature and high temperature heat emitters
- Cost effective alternative to a fossil fuel boiler
- Low energy bills and low CO2 emissions

2 Specifications

2-1 Technical Specifications					EKHVMRD50AAV1	EKHVMRD80AAV1
Casing	Colour				Metallic grey	
	Material				Precoated sheet metal	
Dimensions	Unit	Height		mm	705	
		Width		mm	600	
		Depth		mm	695	
	Packed unit	Height		mm	860	
		Width		mm	680	
		Depth		mm	800	
Weight	Unit			kg	92	
	Packed unit			kg	103	
Packing	Material				EPSCardboard + MDFWood (pallet) + Metal	
	Weight			kg	8.75	
Pump	Type				DC motor	
	Nr of speeds				Inverter controlled	
	Nominal ESP unit	Heating		kPa	83.7	58.8
Expansion vessel	Heating	Volume		l	7	
	Max. water pressure			bar	3	
	Pre pressure			bar	1	
Operation range	Heating	Ambient	Min.	°C	-15	
			Max.	°C	20	
		Water side	Min.	°C	25	
			Max.	°C	80	
	Domestic hot water	Ambient	Min.	°CDB	-15	
			Max.	°CDB	35	
		Water side	Min.	°C	45	
			Max.	°C	75	
Refrigerant side heat exchanger	Type				Plate heat exchanger	
	Quantity				1	
	Plates	Quantity			66	
	Material				AISI 316	
	Insulation material				Felt type	
Water side Heat exchanger	Water flow rate	Min.		l/min	5	
		Heating	Nom.	l/min	16.1	25.8
	Heating	Type			Plate heat exchanger	
		Quantity			1	
		Plates	Quantity		72	
		Material			AISI 316	
		Water volume		l	2.2	
		Insulation material			Felt type	
	Cooling	Plates	Quantity		-	
Cascade compressor	Quantity				1	
	Motor	Type			Hermetically sealed swing compressor	
		Starting method			Direct on line	
Refrigerant	Type				R-134a	
	Charge			kg	2	
Refrigerant circuit	Gas side diameter			mm	12.7	
	Suction side diameter			mm	15.9	
	Liquid side diameter			mm	9.52	
	High pressure side	Design pressure		bar	38	
Refrigerant oil	Type				FVC50K	
	Charged volume			l	0.75	
Sound pressure level	Nom.			dBA	40 (4) + 43 (5)	42 (4) + 43 (5)
	Night quiet mode	Level 1		dBA	38	
Water filter	Diameter perforations			mm	1	
	Material				Brass	

2 Specifications

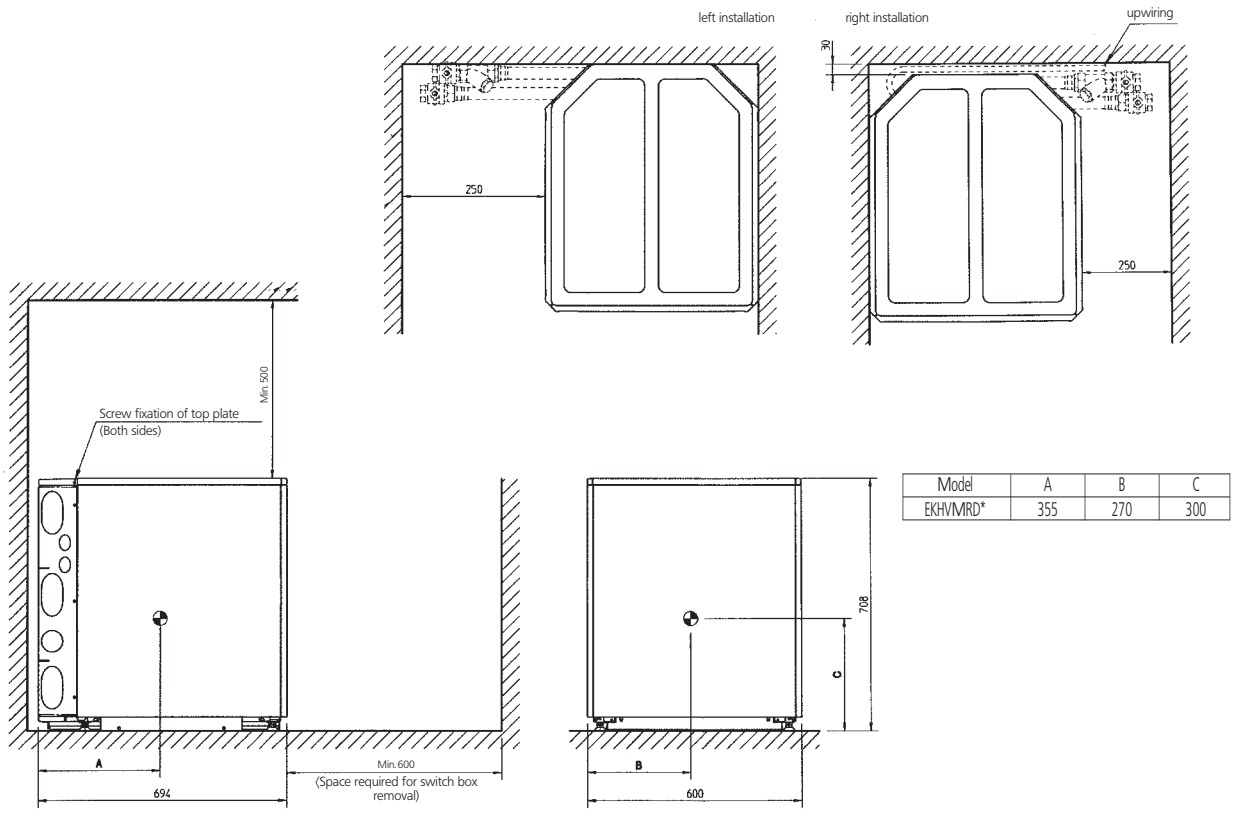
2-1 Technical Specifications					EKHVMRD50AAV1	EKHVMRD80AAV1
Water circuit	Piping connections diameter			inch	G 1" (female)	
	Piping			inch	1"	
	Safety valve			bar	3	
	Manometer				Yes	
	Drain valve / fill valve				Yes	
	Shut off valve				Yes	
	Air purge valve				Yes	
	Heating water system	Water volume	Min.	l	20	
			Max.	l	200	
Installation place					Indoor	

2-2 Electrical Specifications					EKHVMRD50AAV1	EKHVMRD80AAV1
Power supply	Name				V1	
	Phase				1~	
	Frequency			Hz	50	
	Voltage			V	220-240	
	Voltage range	Min.		%	-10	
		Max.		%	6	
Current	Zmax	Text			0.46	
	Minimum Ssc value			kVa	1,459	
	Maximum running current	Heating		A	16.5	
	Recommended fuses			A	20	
Multi tenant	Power supply	Voltage		V	24	
		Voltage range	Min.	%	-20	
			Max.	%	20	
	Current	Maximum running current		A	1	
		Recommended fuses		A	3	
Wiring connections	For power supply	Quantity			2G	
		Type of wires			Select diameter and type according to national and local regulations	
	Benefit kWh rate power supply installations	Quantity			2G+2G	
		Type of wires			Select diameter and type according to national and local regulations	
	For power supply multi tenant	Quantity			2G	
		Remark			Select diameter and type according to national and local regulations	
	For connection with outdoor unit	Quantity			2	
		Remark			F1 + F2	
Power supply intake					Both indoor and outdoor unit	
Notes					Maximum water flow rate for Dt: 5°C	

3 Dimensional drawings

3 - 1 Dimensional Drawings

EKHVMRD50-80A



Model	A	B	C
EKHVMRD*	355	270	300

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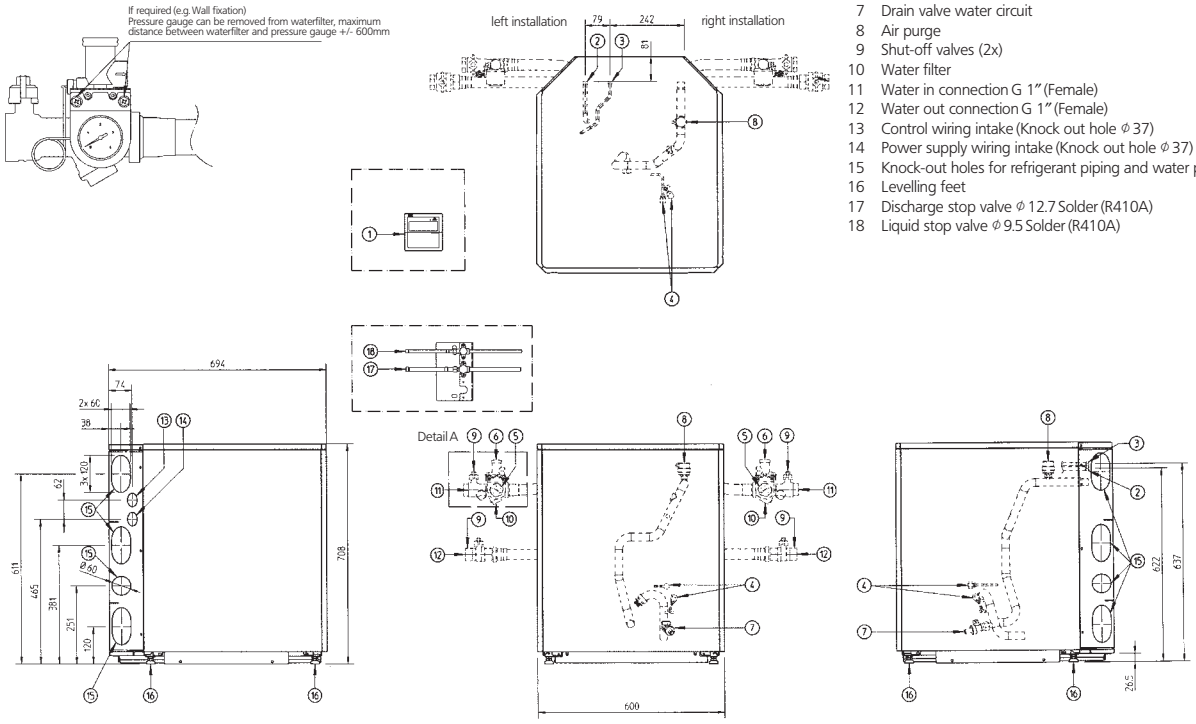
3 Dimensional drawings

3 - 1 Dimensional Drawings

EKHVMRD50-80A



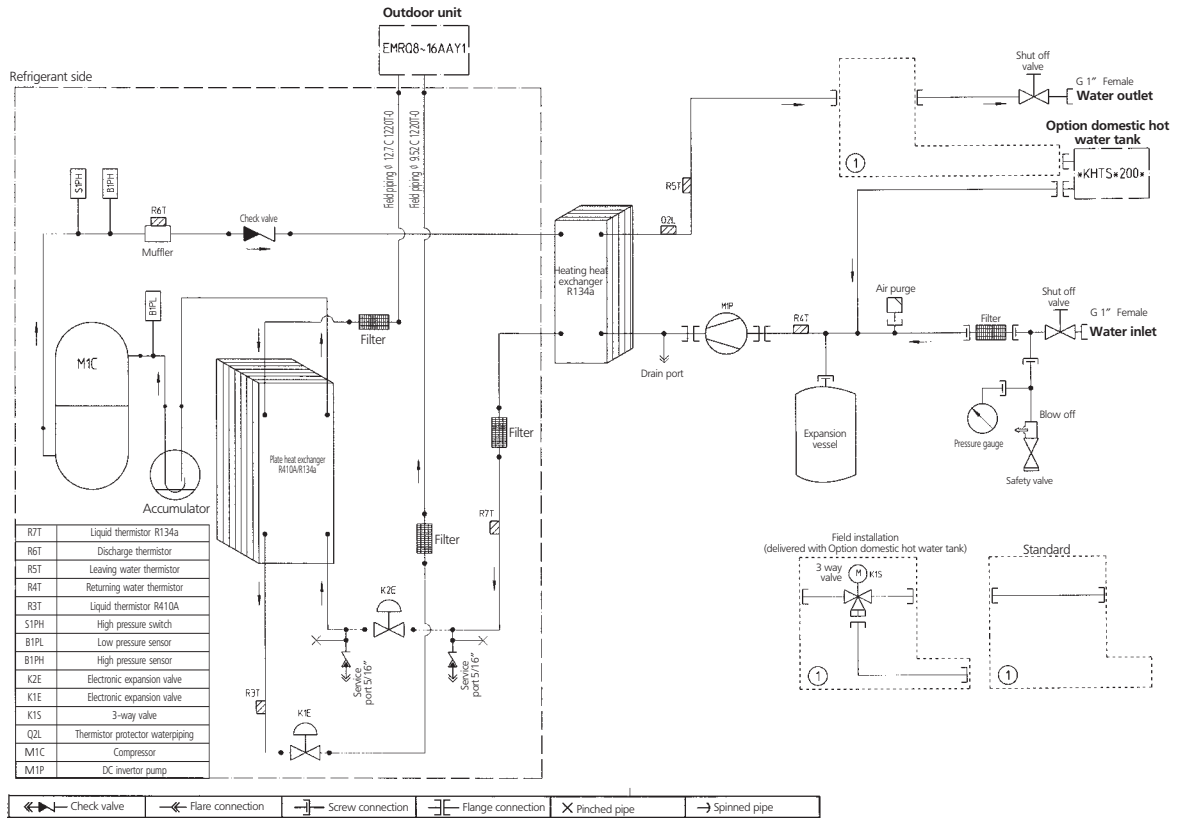
1 Remote controller (delivered as accessory)
Installation location is outside the unit
2 Discharge pipe connection ⌀ 12.7 Solder (R410A)
3 Liquid pipe connection ⌀ 9.5 Solder (R410A)
4 R1340 Service ports 5/16″ flare (2x)
5 Pressure gauge
6 Blow off valve
7 Drain valve water circuit
8 Air purge
9 Shut-off valves (2x)
10 Water filter
11 Water in connection G 1″ (Female)
12 Water out connection G 1″ (Female)
13 Control wiring intake (Knock out hole ⌀ 37)
14 Power supply wiring intake (Knock out hole ⌀ 37)
15 Knock-out holes for refrigerant piping and water piping
16 Levelling feet
17 Discharge stop valve ⌀ 12.7 Solder (R410A)
18 Liquid stop valve ⌀ 9.5 Solder (R410A)

3TW59914-1A

4 Piping diagrams

4 - 1 Piping Diagrams

EKHVMRD50-80AAV1



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5 Wiring diagrams

5 - 1 Wiring Diagrams

NOTES TO GO THROUGH BEFORE STARTING THE UNIT

X1M : Main terminal
X2M : Field wiring terminal for high voltage
X3M : Field wiring terminal for low voltage

—— - —— - : Earth wiring
---------- : Field supply

: Option

: Wiring depending on model

: Not mounted in switchbox

: PCB

—**/12.2 : Connection ** continues on page 12 column 2

: Several wiring possibilities

User installed:

KHTS = Domestic hot water tank
KRTW = Room thermostat (Wired)
KRTR = Room thermostat (Wireless)
*KRTETS = External temperature sensor for *KRTR*
*KRUAHT = Remote user interface
KRP1HB = Digital I/O PCB
KRP1AHT = Demand PCB

Legend

* : included in option kit
\# : field supplied

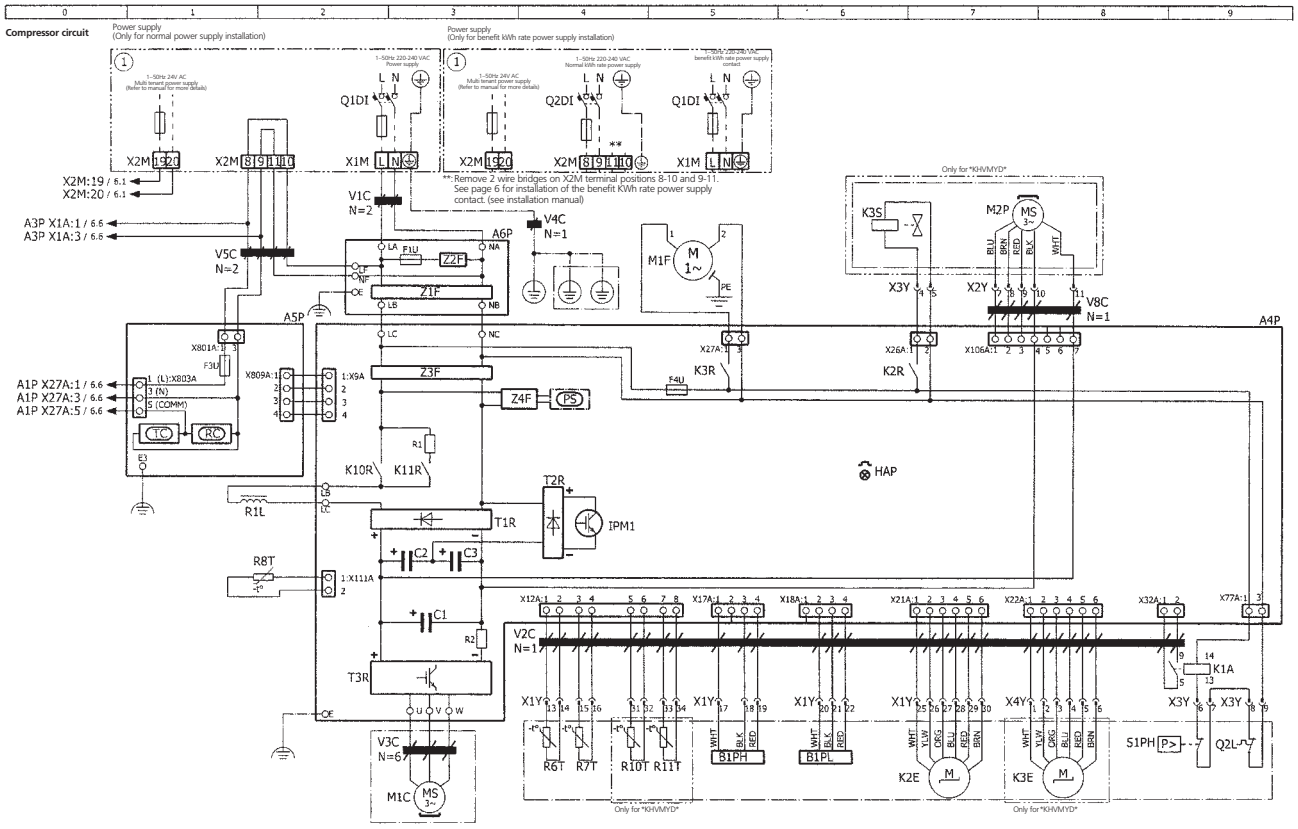
A1P		: Main PCB
A2P		: User interface PCB
A3P		: control PCB
A4P		: Inverter PCB
A5P		: QA PCB
A6P		: Filter PCB
A7P	*	: Digital I/O PCB
A8P	*	: Demand PCB
A9P		: Multi tenant PCB
A10P	*	: Thermostat PCB
A11P	*	: Receiver PCB
B1PH		: High pressure sensor
B1PL		: Low pressure sensor
C1-C3		: Filter capacitor
C1-C3 (ASP)		: PCB Capacitor
DS1 (A*P)		: Dipswitch
F1U		: Fuse (T,3.2A, 250V)
F1U (A1P,A3P,A9P)		: Fuse (T, 3.15A, 250V)
F1U (A6P)		: Fuse (T, 6.3A, 250V)
F1U-F2U (A7P)		: Fuse (5A, 250V)
F3U-F4U (A*P)		: Fuse (T, 6.3A, 250V)
HAP (A*P)		: PCB LED
IPMI		: Integrated power module
K1A-K3A		: Interface relay
K1E-K3E		: Electronic expansion valve
K*R (A*P)		: PCB Relay
K1S	*	: 3 way valve
K2S		: 3 way valve
K3S		: 2 way valve
K4S	#	: 2 way valve
M1C		: Compressor
M1F		: Switchbox cooling fan
M1P-M2P		: DC inverter pump
PC (A11P)	*	: Power circuit
PHC1		: Optocoupler input circuit
PS (A*P)		: Switching power supply
Q1DI-Q2DI	#	: Earth leakage protector
Q2L		: Thermal protector water piping
R1-R2 (A4P)		: Resistance
R1L		: Reactor
R1H (A10P)	*	: Humidity sensor
R1T (A10P)	*	: Ambient sensor
R2T	*	: Domestic hot water tank Thermistor
R2T	*	: External sensor (floor or ambient)
R3T		: Liquid thermistor R410A
R4T		: Returning water thermistor
R5T		: Leaving water thermistor (heating)
R6T		: Discharge thermistor
R7T		: Liquid thermistor R134a
R8T		: Fin thermistor
R9T		: Leaving water thermistor (cooling)
R10T		: Liquid thermistor (cooling)
R11T		: Suction thermistor (cooling)
RC (A*P)		: Receiver circuit
S1PH		: High pressure switch
S1S	#	: benefit kWh rate power supply contact
S3S	#	: Input multiple setpoint
S4S	#	: Input multiple setpoint
SS1 (A1P)		: Selector switch (emergency)
SS1 (A2P)		: Selector switch (master slave)
SS1 (A7P)	*	: Selector switch
TC (A*P)		: Transmitter circuit
T1R-T2R (A*P)		: Diode bridge
T3R		: Power module
V1C-V8C		: Ferrite core noise filter
X1M-X3M		: Terminal strip
X*M (A*P)	*	: PCB terminal strip
X1Y-X4Y		: Connector
Z1F-Z5F (A*P)		: Noise filter

4TW59916-1A

5 Wiring diagrams

5 - 1 Wiring Diagrams

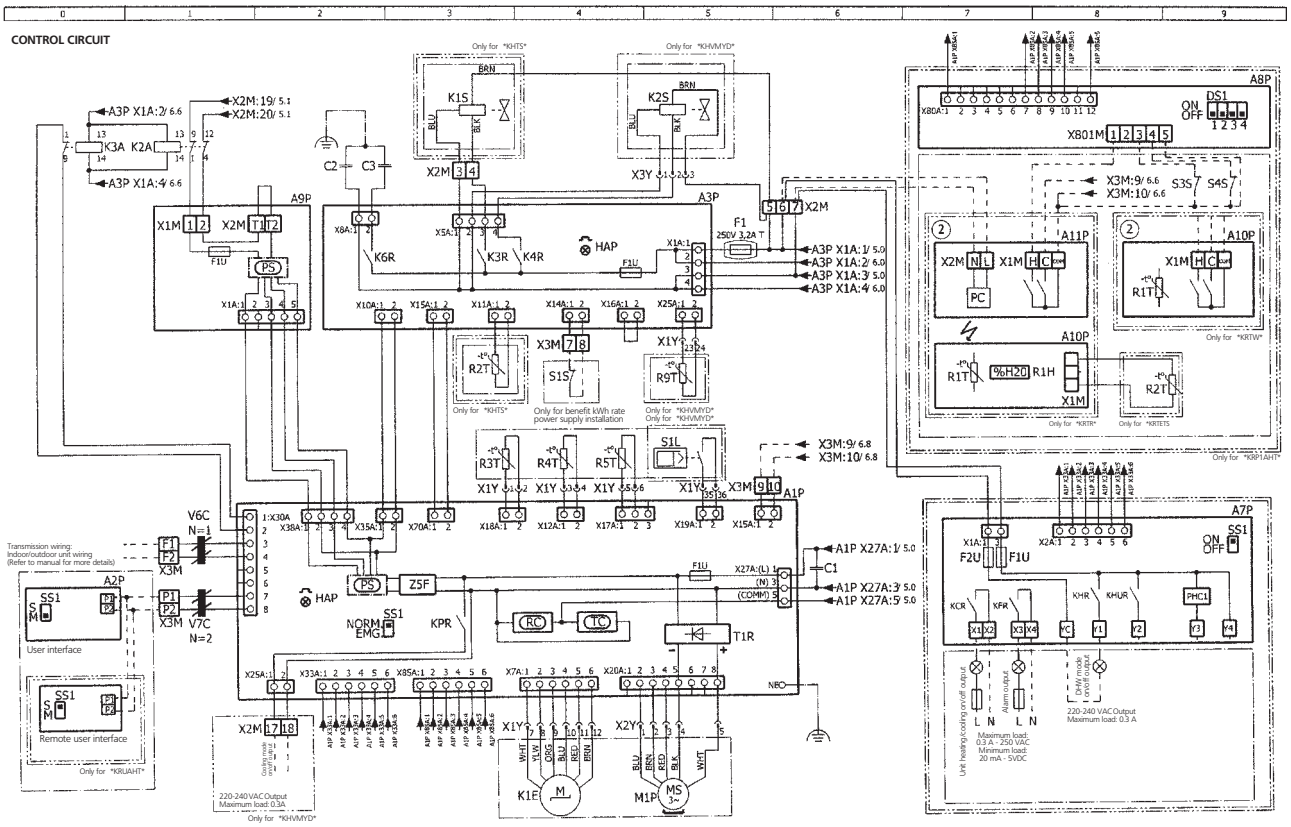
EKHVMRD50-80



5 Wiring diagrams

5 - 1 Wiring Diagrams

EKHVMRD50-80A



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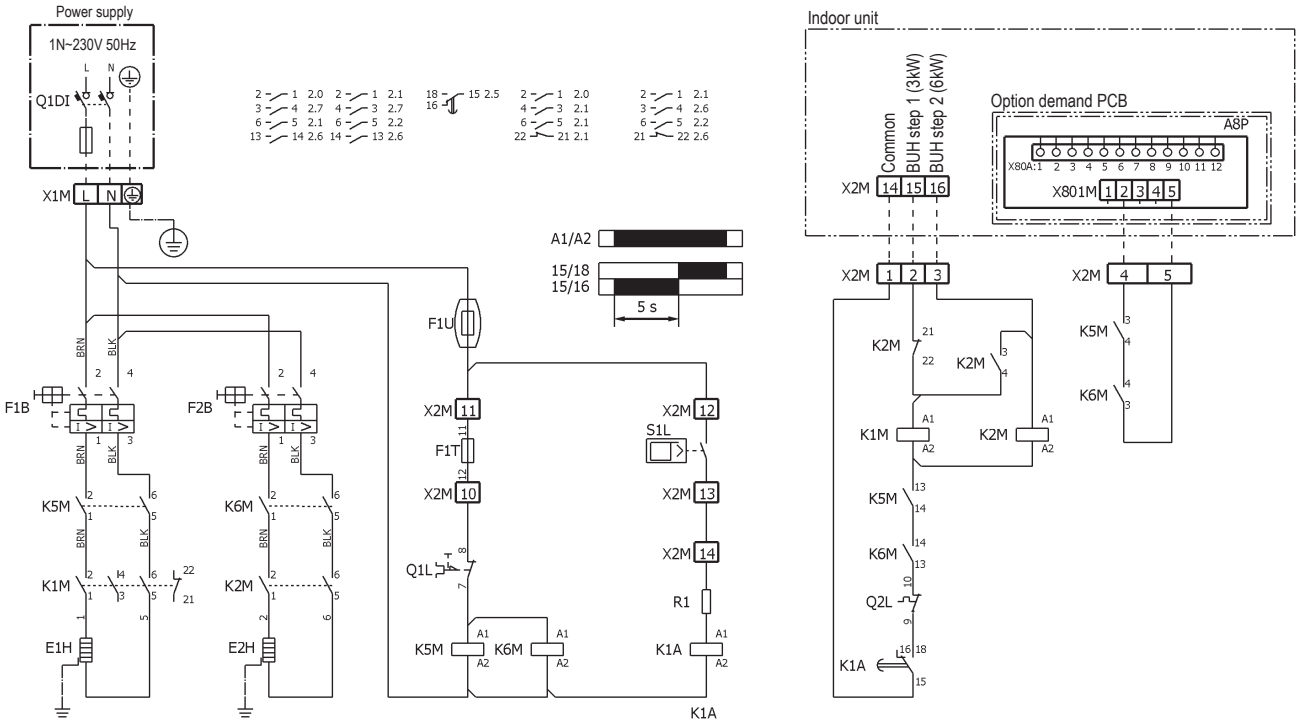
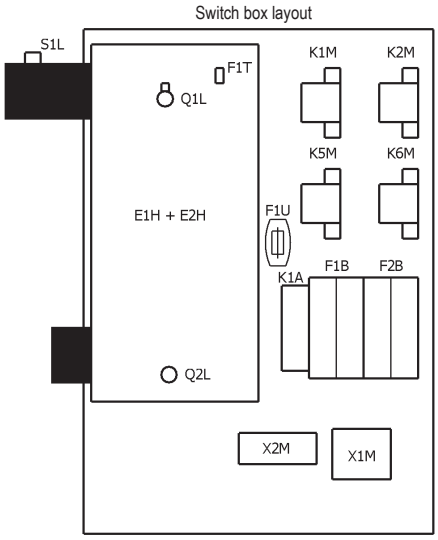
5 Wiring diagrams

5 - 1 Wiring Diagrams

EKBUH-AA6V3





Part number		Description	Part number		Description
A8P		Demand PCB (Indoor unit option)	S1L		Flowswitch
E1H, E2H		Backup heater elements	Q1DI	#	Earth leakage protector
F1B, F2B		Fuse backup heater (20A 400V)	Q1L		Thermal protector backup heater (manual reset)
F1U		Fuse (5A T 250V)	Q2L		Thermal protector inlet water (automatic reset)
F1T		Thermal fuse backup heater	R1		Inline resistor for flowswitch
K1A		Time relay (on-delay)	X1M,X2M		Terminal strip
K1M, K2M		Contactor backup heater step	X801M		PCB terminal strip
K5M, K6M		Contactor for backup heater (all pole disconnection)			

*: optional #: field supplied

4TW59726-1

NOTES

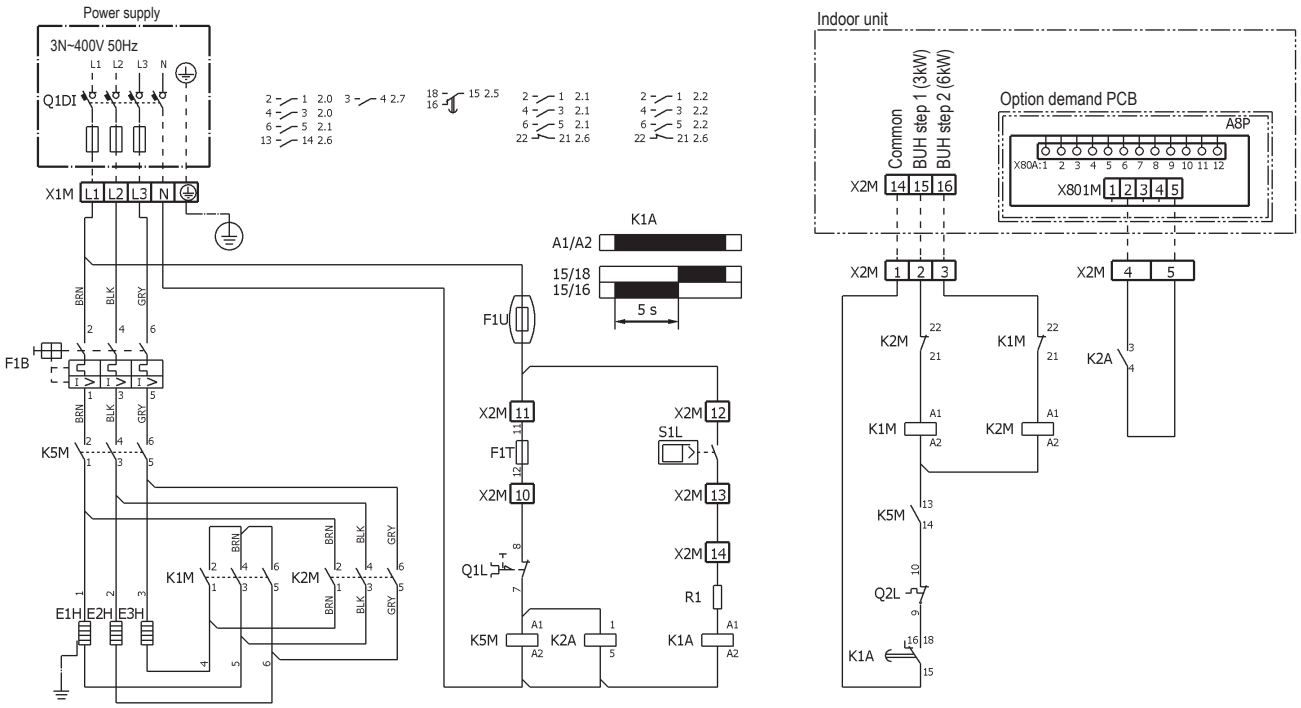
X1M : Main terminal
X2M : Field wiring terminal
: Earth wiring
15 : Wire number 15
: Field supply
(1) : Several wiring possibilities

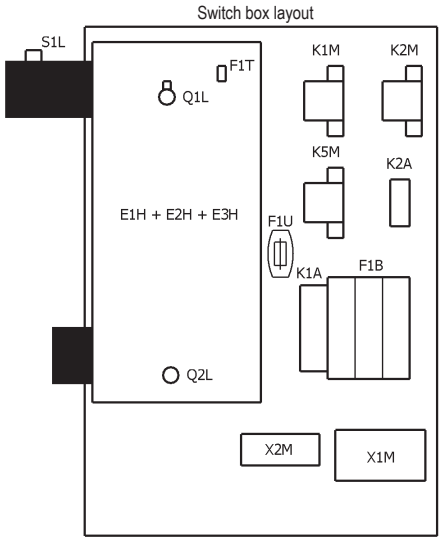
: Option
: Wiring depending on model
: Not mounted in switch box
: PCB

5 Wiring diagrams

5 - 1 Wiring Diagrams

EKBUH-AA6W1





Part number		Description	Part number		Description
A8P		Demand PCB (Indoor unit option)	K5M		Contactor for backup heater (all pole disconnection)
E1H, E2H, E3H		Backup heater elements	S1L		Flowswitch
F1B		Fuse backup heater (20A 400V)	Q1DI	#	Earth leakage protector
F1U		Fuse (5A T 250V)	Q1L		Thermal protector backup heater (manual reset)
F1T		Thermal fuse backup heater	Q2L		Thermal protector inlet water (automatic reset)
K1A		Time relay (on-delay)	R1		Inline resistor for flowswitch
K2A		Auxilary relay	X1M,X2M		Terminal strip
K1M, K2M		Contactor backup heater step	X801M		PCB terminal strip

*: optional #: field supplied

4TW59726-2

NOTES

X1M : Main terminal
X2M : Field wiring terminal
: Earth wiring
15 : Wire number 15
: Field supply
(1) : Several wiring possibilities

: Option
: Wiring depending on model

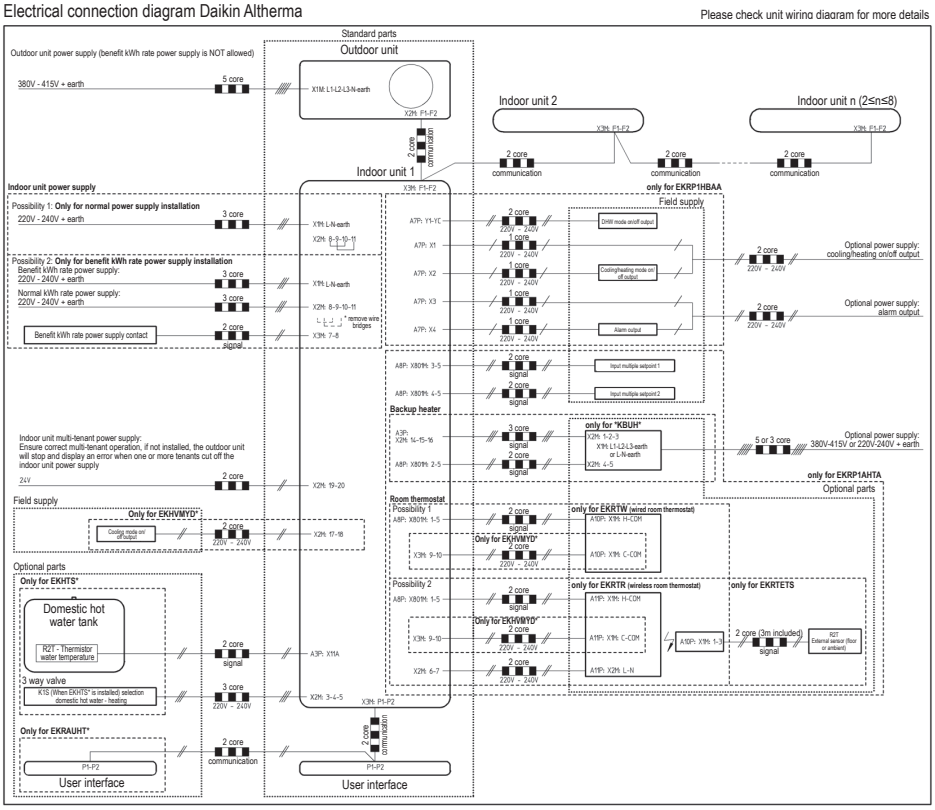
: Not mounted in switch box
: PCB

6 External connection diagrams

6 - 1 External Connection Diagrams

EKHVMRD

Electrical connection diagram Daikin Altherma



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NOTE

In case of signal cable or communication cable, keep minimum distance to power cables > 25mm

7 Sound data

7 - 1 Sound Power Spectrum

EKHVMRD50-80A

	Sound power Lw per Octave band (dB)							Total (dBA)
	125	250	500	1000	2000	4000	8000	LwA
EKHVMRD50AAV1	38	49	49	47	41	41	39	54
EKHVMRD80AAV1	39	50	51	45	45	43	41	55

Notes

- Measured according to ISO3744
- Reference acoustic pressure 0dB = 10E-6μW/m²
- dBA=A-weighted sound power level

- Unit condition: Ta=7/6°C - Heating setpoint 55/65°C - Maximum compressor frequency

- If sound is measured under actual installation conditions, the measured value will be higher due to environmental noise and sound reflections. Choose the installation location carefully and do not install in a sound sensitive environment (e.g. living room, bedroom, . . .)

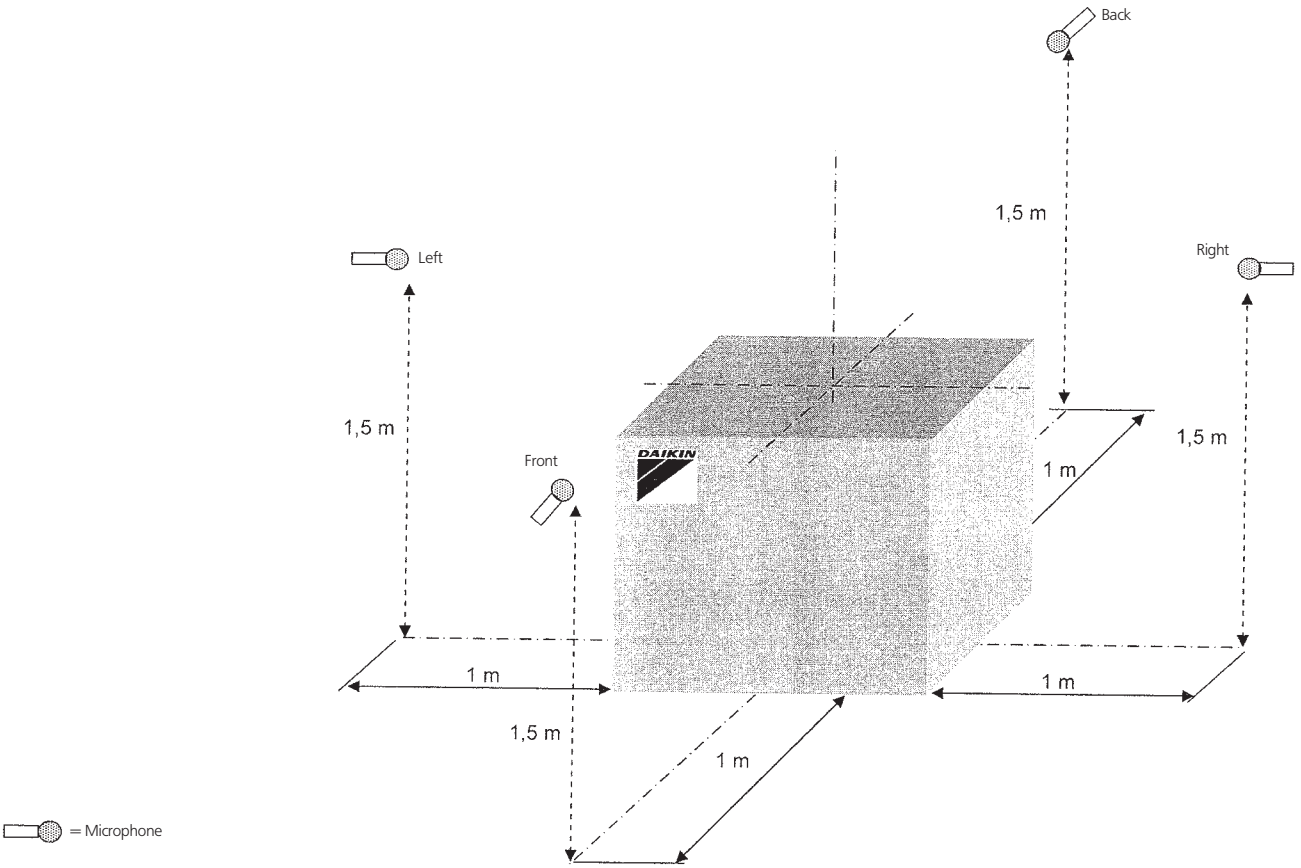
3TW59917-2

7 Sound data

7 - 2 Sound Pressure Spectrum

EKHVMRD50-80A

Position of microphones



Sound levels

Sound pressure [dBA]		
	EKHVMRD	
	50	80
[EW/LW 55/65°C]		
Front	40	42
Left / Right / Back (*)	40	41
[EW/LW 70/80°C]		
Front	40	43
Left / Right / Back (*)	40	42
[EW/LW 55/65°C] - Low sound mode n°1		
Front~Right (*)	38	38

Notes

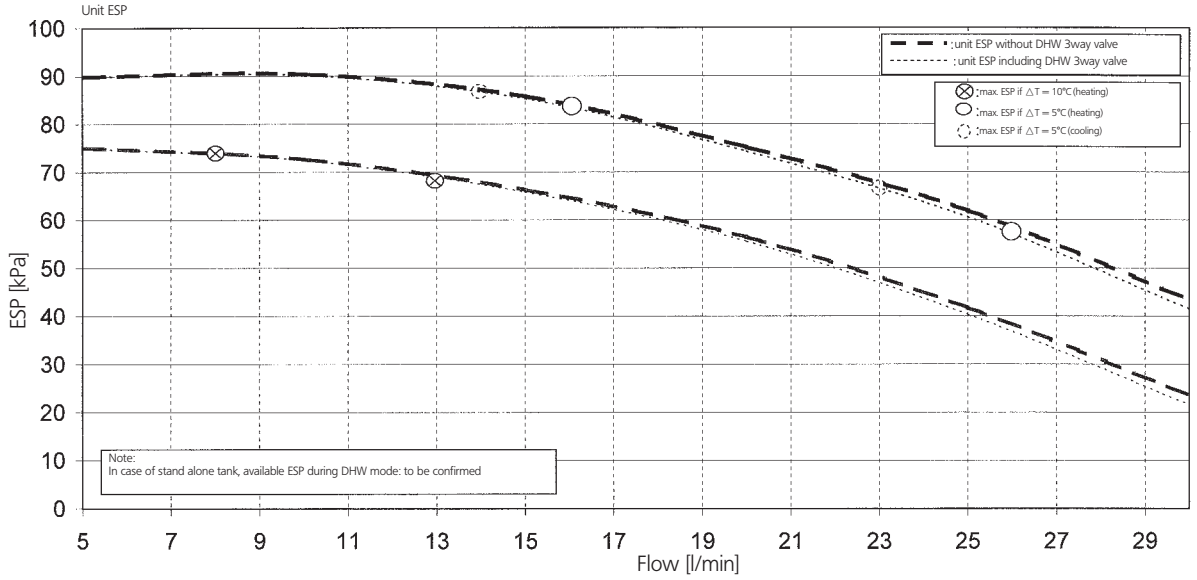
- The above data is valid in free field condition, because it is measured in a semi-anechoic room. If sound is measured under actual installation conditions, the measured value will be higher due to environmental noise and sound reflections. Choose the installation location carefully and do not install in a sound sensitive environment (e.g. living room, bedroom, . . .)
- dB(A) = A-weighted sound pressure level (A-scale according to IEC)
- EW = Entering water temperature - LW = Leaving water temperature
- Reference acoustic pressure 0dB = 20µPa
- Sound pressure level of low sound mode n°2 and n°3 is lower than n°1
- (*) Does not occur simultanuously on all sides.

3TW59917-1

8 Hydraulic performance

8 - 1 Static Pressure Drop Unit

EKHVMRD50-80A



1. The ESP curves are the maximum ESP curves for different DT types (pump rpm=4000 for △T=5°C; pump rpm=3600 for △T=10°C)
   The pump of the indoor module is inverter controlled and controls to have a fixed △T between return and leaving water temperature.
2. In case of installing a domestic hot water tank there is an additional pressure drop over the three way valve (delivered as accessory with the tank)

ESP: External static pressure
Flow: waterflow through the unit

Warning
1. Selecting a flow outside the curves can cause damage to or malfunction of the unit. See also minimum and maximum allowed water flowrange in the technical specifications.
2. Water quality must be according to EN directive EC 98/83 EC.

3TW59919-5

Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.

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